

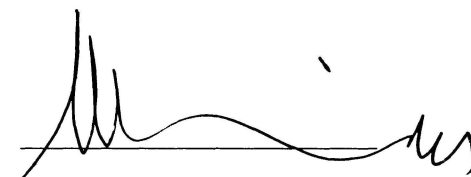
**SORPTION OF AMIDO BLACK 10 B ONTO CALCINED Zn-Al-NO_3
LAYERED DOUBLE HYDROXIDE AND CALCINED Zn-Al-CO_3
LAYERED DOUBLE HYDROXIDE**

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This Final Year Project report entitled “**Sorption of Amido Black 10 B Onto Calcined Zn-Al-NO₃ Layered Double Hydroxide and Zn-Al-CO₃ Layered Double Hydroxide**” was submitted by Mohd Hanisafwan, in partial fulfillment of requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in Faculty of Applied Sciences, and was approved by



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ABSTRACT

SORPTION OF AMIDO BLACK 10 B ONTO CALCINED Zn-Al-NO₃ LAYERED DOUBLE HYDROXIDE AND CALCINED Zn-Al-CO₃ LAYERED DOUBLE HYDROXIDE

Layered double hydroxides (LDHs) calcined, denoted as CLDHs, have been shown to recover their original layered structure in the presence of appropriate anions. In the light of this so-called “memory effect”, the removal of Amido Black (AB), an anionic dye, from aqueous solution by calcined Zn-Al-NO₃ and Zn-Al-CO₃ LDHs was investigated in batch mode. The study looked at the influence of pH values, dye-adsorbent contact time, initial dye concentration, adsorbent dosage, particle size, and various temperatures on the decolorization rate of AB. The adsorption isotherms, described by Freundlich model are L-type. The characterization of the solids CLDHs, both before and after removal of AB, by X-ray diffraction, Scanning Electron Microscope and infrared spectroscopy shows that the AB adsorption on CLDHs is enhanced by reconstruction of a matrix hydrotalcite intercalated by the dye, and the intercalation of the organic ion was clearly evidenced by the net increase in the basal spacing from 7.6 Å for Zn-Al-NO₃ and 7.59 for Zn-Al-CO₃.